Journal of Research on the Lepidoptera 3 (3) :129-144, 1964

1140 W. Orange Grove Ave., Arcadia, California, U.S.A.
© Copyright 1964

REVISION OF THE NORTH AMERICAN GENUS *BEHRENSIA*

WITH A DESCRIPTION OF A NEW SUBSPECIES

J. S. BUCKETT

University of California
Davis, California

There has been no comprehensive work on the unique, little-known genus *Behrensia* Grote. This genus is represented by *conchiformis conchiformis* Grote, *conchiformis suffusa* Buckett and *bicolor* McDunnough, the type species being nominate *conchiformis* Grote. This revision contains redescriptions of the genus, redescriptions of the two previously contained species and complete synonymy, description of a new subspecies, descriptions of the fifth instar larva and pupa of nominate *conchiformis*, photographs of the adults, illustrations of the genitalic organs of both sexes in each species, and additional distribution for each species.

The genitalic mounts were prepared using lignin pink stain and balsam as the mounting media, the lignin pink being employed to better contrast weakly sclerotized areas. In the female genitalia the bursa was inflated; in the male, the aedeagus has been removed from the remainder of the genitalia for clarity of illustration. The genitalic illustrations were prepared by aid of a bioscope, additions and/or corrections being made by use of a dissecting microscope. The genitalic illustrations were all drawn to the same scale.

Literature dealing with *Behrensia* reveals a description of the genus and a description of each species, drawings of the wing venation and portions of nominate *conchiformis* Grote (Hampson, 1906), a photograph of a rubbed specimen (Holland, 1903), and a very poor painting of *conchiformis* in Draudt's work (Seitz, 1923). Evidently the internal structures have not yet been illustrated and nothing to my knowledge has been published on the immature stages of any members in the genus.

At this time, I wish to extend my appreciation to Dr. W. Harry Lange, Professor of Entomology, University of California, Davis, for reviewing the manuscript, and for his many helpful suggestions. Many thanks are also due Miss Judith Jay, De-

SMITHSONIAN INSTITUTION APR 9 1965

partmental Artist for the Entomology Department, University of California, Davis, for the illustrations. I am also indebted to Mr. A. Noel McFarland of Valyermo, California, for the fifth instar larva and pupa of nominate *conchiformis* as well as for his notes on the larval habitus of this species. Special thanks go to Mr. Lloyd M. Martin of the Los Angeles County Museum and to Dr. C. Don McNeil of the California Academy of Sciences for the loan of all specimens of *Behrensia* contained in their institutions.

The specimens used in this study were from the following institutions:

1. Bauer-Buckett collection, Davis, California.
2. California Academy of Sciences, San Francisco, California.
3. Entomology Collection, University of California, Davis.
4. Los Angeles County Museum, Los Angeles, California.

Behrensia Grote

Behrensia Grote, 1875. Type species *conchiformis*. Canadian Ent. 7:70.

HEAD sunken; antennae simple, dorsal row of scales light colored, ventrally with microciliations, ciliations becoming longer terminally, large tufts of hair from scape; eyes rounded, lashed, naked; palpi obliquely upturned, 3rd segment one half the length of second segment; proboscis normal. THORAX with collar composed of porrect spatulate hairs, protruding forward over head; metathorax with divided crest; mesothorax with narrow divided crest; legs clothed in brown hairs; each tarsal segment predominantly black, remainder white banded. Primaries short and broad, main veins developed into dorsal ridges; R_1 from cell; R_3 from R_2 anastomosing with R_4 to form areole; M_1 from upper angle of cell; cell open apically between M_1 and M_2; M_2 and Cu_1 from near angle of cell. Secondaries faintly or predominantly bicolor; SC anastomosing with cell near base; R and M_1 stalked; M_2 obsolescent from just below middle of discocellulars; M_1 and Cu_1 from angle of cell. Abdomen dark brown to black with large brown dorsal tufts on segments 2 and 3; long white-tipped black or brown hairs terminally. Greatest length of forewing 12-14mm.

DISCUSSION

Until the description of *bicolor* McDunnough (1941), *Behrensia* was a monotypic genus with *conchiformis* Grote designated

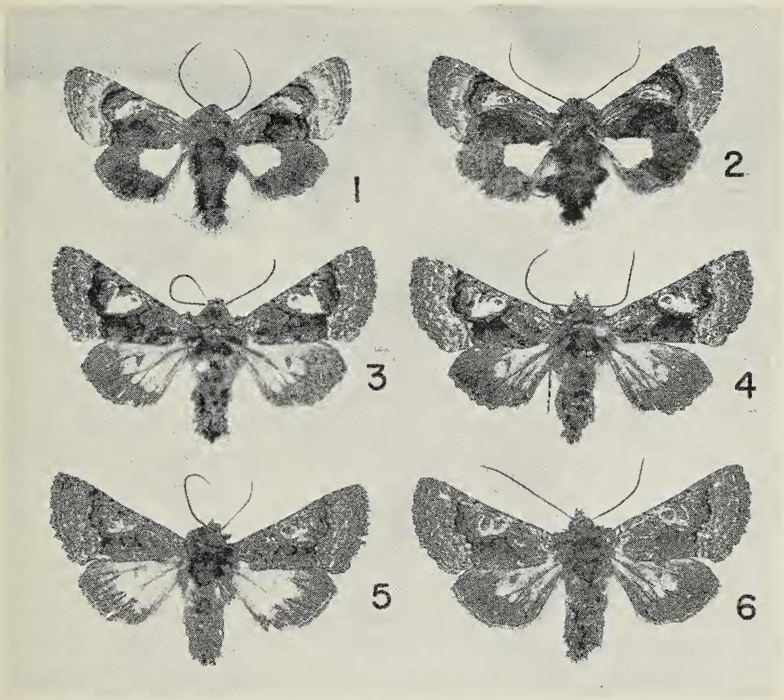


Fig. 1. Male, *Behrensia bicolor* McDunnough, Johnsville, Plumas County, California, June 10, 1962 (H. J. Pini).

Fig. 2. Female, *B. bicolor*, same locality as figure 1, May 18, 1962 (H. J. P.).

Fig. 3. Male, *B. conchiformis conchiformis* Grote, Anderson Springs, Lake County, California, March 5, 1960 (W. R. Bauer & J. S. Buckett).

Fig. 4. Female, *B. conchiformis conchiformis*, same locality as figure 3, March 16, 1960 (W. R. B. & J. S. B.).

Fig. 5. Paratype male, *B. conchiformis suffusa* Buckett, 2 miles S. E. Modjeska, Santa Ana Mountains, Orange County, California, March 2, 1963 (the Flemings).

Fig. 6. Paratype Female, *B. conchiformis suffusa*, Ojai, Ventura County, California, February 25, 1962 (W. E. Simonds).

as the type species by original designation. McDunnough places *Behrensia* near *Xylena* Ochsenheimer, from which it differs superficially by its much smaller size, blacker coloration, less elongrated wings, and the presence of abdominal tufting. The smallest North American *Xylena* exhibits a forewing expanse of no less than 20mm. The greatest expanse exhibited by either *Behrensia* species is 14mm.

Behrensia apparently is not closely related to *Xylena* superficially or genitalically. In the male genitalia, the short, blunt digitus, as well as the lack in other modifications of the valve, seem to remove *Behrensia* from its present placement. It seems more logical to place *Behrensia* near *Oncocnemis* Lederer as indicated by various internal structures as the internal tympanum. The only obvious factor relating *Behrensia* to *Xylena, Xylotype* Hampson or any of this section of the Cucullinae is the wing venation. (It may be noted that the wing venation of *Behrensia* is also very similar to that of *Syngrapha* Hbn., with the exception of the adjunction of R_4 to R_3. The genitalic structures of both sexes are symbolic of some Plusiinae.)

The presence of a corona on the valve of the male genitalia is apparently a constant characteristic of the Cucullinae until *Behrensia* is considered. At best, it has a very weak suggestion of a corona. The absence of a corona combined with additional external characteristics has been definitive of Plusiinae. *Behrensia* lacks the well-developed digitus of the male genitalia, and it does not turn down obliquely across the valve before the cucullus. *Behrensia* is placed in the Lithophanini if one if to correlate the information published to date.

The deciding factor placing *Behrensia* very nearly where it is now placed is the larva. With one species of larvae at hand and the accompanying notes on larval habits, one can see relationships between *Behrensia* and *Pleroma* Smith.

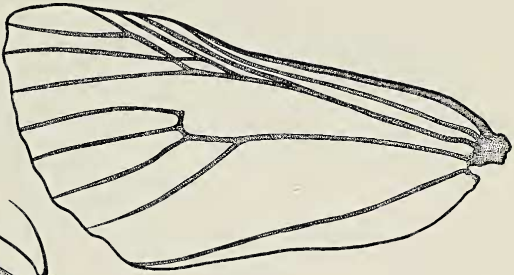
Until a much more thorough study can be made of *Behrensia* in relationship to other genera in the Cucullinae, there may be disagreement as to its placement.

Superficial Key to Adults

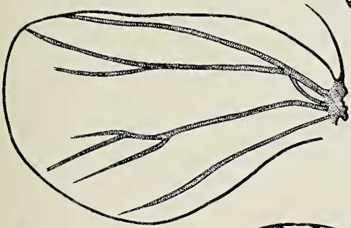
1. Secondaries very distinctly bicolor, as in figures 1 and 2.........*bicolor* McD.
Secondaries indistinctly bicolor; primaries with scattered gold and green scales 2
2. Primaries with median area black, distinctly contrasting with sub-terminal and terminal areas; orbicular and reniform pure white; white scales present in both subterminal and terminal areas ....*conchiformis conchiformis* Grote
Primaries suffused with smokey gray scales, median area not as above; orbicular and reniform suffused with smokey gray scales; subterminal and terminal areas both lacking white scales.
....*conchiformis suffusa* Buckett, n. ssp.

Key by male genitalia

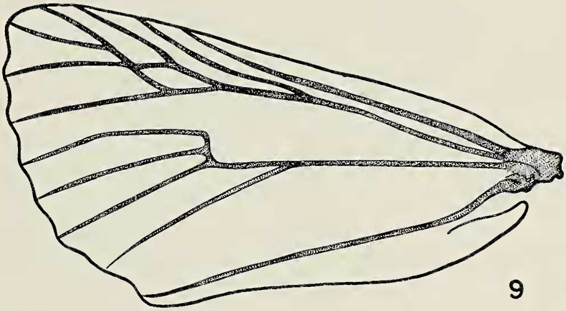
1. Valve less than 2.5 mm long; aedeagus .50mm at narrowest width, less than 2.5 mm long; vessica with single large spine as in figure 12 ....*bicolor* McD.



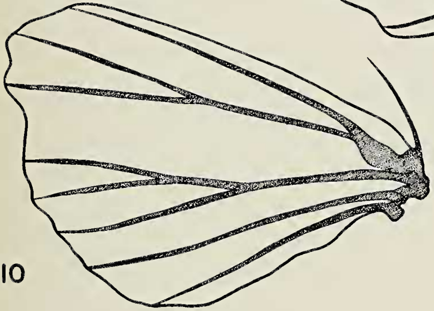
7



8



9



10

Fig. 7. Wing venation of right primary, *B. bicolor* (Bauer-Buckett slide No. 63C26-21), Johnsville, Plumas County, California, June 7, 1962 (H. J. P.).

Fig. 8. Wing venation of right secondary, *B. bicolor*, same data as figure 7.

Fig. 9. Wing venation of right primary, *B. conchiformis conchiformis* (Bauer-Buckett slide No. 63C26-22), Inverness, Marin County, California, March 10, 1959 (W. R. B. & J. S. B.).

Fig. 10. Wing venation of right secondary, *B. conchiformis conchiformis*, same data as figure 9.

Valve greater than 3.0 mm long; aedeagus .75 mm or greater at narrowest width, greater than 3.0 mm in length; vesica with more than one large spine 2

2. Ampulae of valve large (valves small in comparison with ampulae); armature of vesica in aedeagus heavily sclerotized as in figure 14 ....*conchiformis conchiformis* Grote

Ampulae of valves smaller; valves larger in comparison to ampulae; vesica not extremely heavily sclerotized, as in figure 15. ....*conchiformis suffusa* Buckett, n. ssp.

Key by female genitalia

1. Lamella postvaginalis of genital plate simple ....*bicolor* McD.

Lamella postvaginalis developed into a huge fork, as in figure 17 2

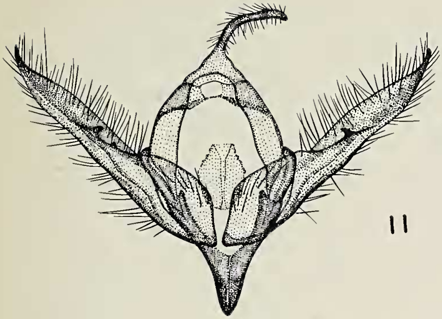
2. Genital plate lightly sclerotized; lamella postvaginalis not widely forked; ovipositor lobes rounded......*conchiformis suffusa* Buckett, n. ssp.

Genital plate lightly sclerotized, lamella postvaginalis widely forked; ovipositor lobes pointed...........*conchiformis conchiformis* Grote

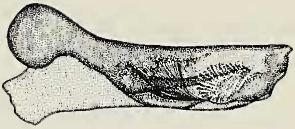
Behrensia conchiformis conchiformis Grote

Behrensia conchiformis Grote, 1875. Canadian Ent. 7:71. Smith, 1893, p. 246; Dyar, 1902, p. 203; Holland, 1903, Moth Book, p. 241, pl. 28, fig. 44; Hampson, 1906, vol. 6, p. 287, fig. 83; Barnes & McDunnough, 1917, p. 59; Draudt in Seitz, 1923, vol. 7, p. 197, pl. 28, fig. 13; Blackmore, 1927, p. 24; McDunnough, 1938, p. 84.

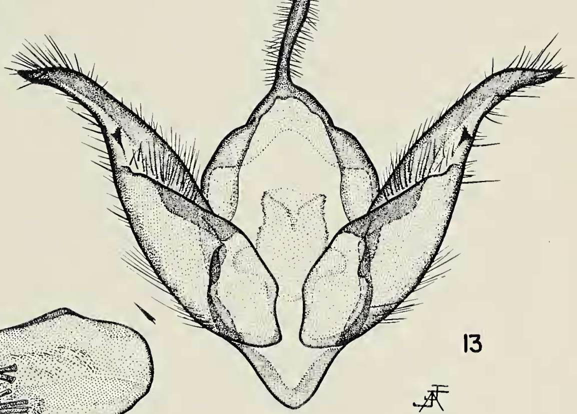
HEAD with antennae moniliform, lengthily setose, terminal setae becoming longer; two lateral single rows of gray scales for entire antennal length; palps with loosely spaced, black simple hairs, a row of contrasting black scales exterolaterally; third segment less than one half the length of second segment; frons covered with brown-tipped scales shading into white-tipped scales at vertex; proboscis normal, setae evident along basal portion. THORAX ash colored with collar of coppery brown elongated scales, porrect, giving head appearance of being sunken; tegulae black anteriorly, posteriorly white-tipped; basal tuft of coppery brown spatulate scales; all tibiae unspined, mid tibiae with one pair of end spurs, hind tibiae with two pair of spurs; tarsi black and white banded. Primaries with deep gray ground color, median area black; basal line harly discernible; basal area with scattering of green-golden scales; transverse anterior line geminate, distally black; clariform outlined in black; orbicular white outlined, centrally filled with ground color, confluent with reniform; reniform basally white fading into ground color distally; transverse posterior line geminate, light brown band formed between geminations; tornus area with scattering of green-golden scales; golden scales present between R_2 and R_3



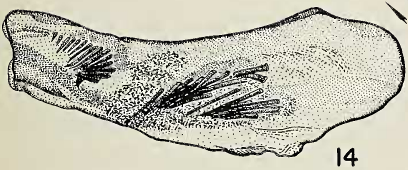
11



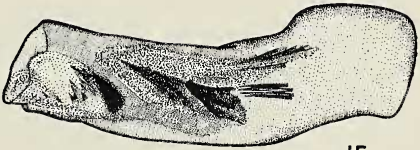
12



13



14



15

Fig. 11. Male genitalia minus aedeagus, *B. bicolor* (Bauer-Buckett slide No. 63C23-21) Johnsville, Plumas County, California, June 7, 1962 (H. J. P.).

Fig. 12. Aedeagus of *B. bicolor,* same data as figure 11.

Fig. 13. Male genitalia minus aedeagus, *B. conchiformis conchiformis* (Bauer-Buckett slide No. 63C23-26) Anderson Springs, Lake County, California, March 16, 1960 (W. R. B. & J. S. B.).

Fig. 14. Aedeagus of *B. conchiformis conchiformis,* same data as figure 13.

Fig. 15. Aedeagus of *B. conchiformis suffusa* (Bauer-Buckett slide No. 63C23-25) Ojai, Ventura County, California, February 25, 1963 (W. E. Simonds).

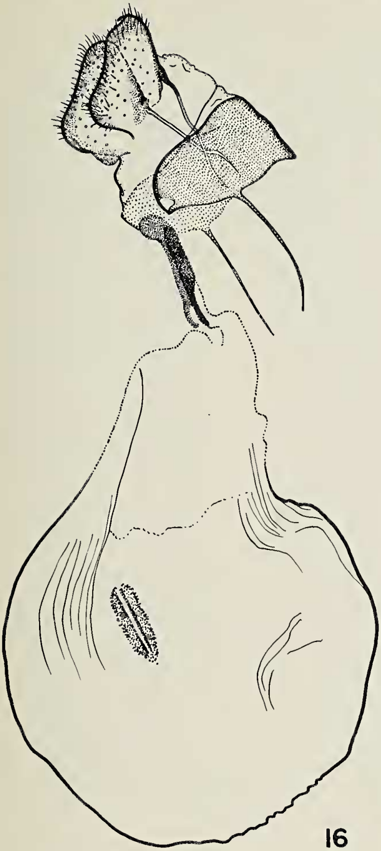
in subterminal area; subterminal and terminal areas both slightly lighter than ground color; subterminal line indicated by a band of white scales; terminal line indicated by dark lunules between veins; fringes deep gray. Ventral surface of primaries with ground color deep gray; median area whitish; transverse posterior line indicated in black. Secondaries basally whitish, irrorated with brown scales; discal mark distinct, black; apical band broad, deep fuscous; fringes white. Ventral surface very similar to dorsal surface except on costal margin where there is a predominance of black scales irrorated evenly over the whitish area. Abdomen blackish; first abdominal segment with large, centrally concave tuft composed of brown scales all of which appear to have arisen centrally; second abdominal segment with a smaller more regular tuft. Expanse of primary 13 mm. Genitalia as in figures 13 and 14.

Female: As in male except whitish basal area may be more suffused with brown fuscous scales. Greatest length of forewing 14 mm. Genitalia as in figure 17. Type locality: Sausalito, Marin County, California. Location of type: British Museum of Natural History.

Specimens examined: 5 males 10 females, Anderson Springs, Lake County, California, March 5-15, 1960 (W. R. Bauer & J. S. Buckett); 2 females, Anderson Springs, Lake County, California, March 22, 1949 (W. R. B.); 1 female, Anderson Springs, Lake County, California, April 16, 1950 (W. R. B.); 1 female, Cobb Mountain, Lake County, California, February 10, 1955 (W. R. B. and J. S. B.); 1 male, Cobb Mountain, Lake County, California, December 27, 1956 (W. R. B. and J. S. B.); 1 female, Angwin, Napa County, California, February 12, 1949 (D. L. Bauer); 5 males, 14 females, Mill Valley, Marin County, California, March 12, 1920 (E. P. Van Duzee); 1 female, Mill Valley, Marin County, California, April 6, 1950 (F. X. Williams); 1 female, Inverness, Marin County, California, March 30, 1950 (H. P. Chandler); 3 females, Inverness, Marin County, California, March 13-14, 1959 (W. R. B. and J. S. B.); 1 male, Inverness, Marin County, California, March 8, 1955 (J. S. B.); 2 females, Petaluma, Sonoma County, California, March 3, 25, 1938 (W. R. B.); 1 male, Berkeley, Alameda County, California, March 8, 1923 (J. E. Law); 1 male, 1 mile north of Elephant Butte, Plumas County, California, April 5, 1960 (W. R. B. and J. S. B.); 4 males, 1 female, 5 miles northwest of Corvallis, Benton County, Oregon, April 1, 1962 (A. N. McFarland); 2 females, 5 miles northwest of Corvallis, Benton County, Oregon, March 1, 1963 (A. N. McFarland); 1 male, McMinnville, Yamhall County, Oregon, April 4, 1953 (K. M. Fender); 2 males, 5 miles northwest of Corvallis, Benton County, Oregon, April 2, 1962 (A. N. McFarland); 1 female, Quamichan District, Vancouver Island, British Columbia, April 14, 1920 (A. W. Hanham).

DISCUSSION

This species is taken in fair numbers, but can hardly be considered overly abundant as are many of our more common species. *B. conchiformis* in California is collected primarily in


16

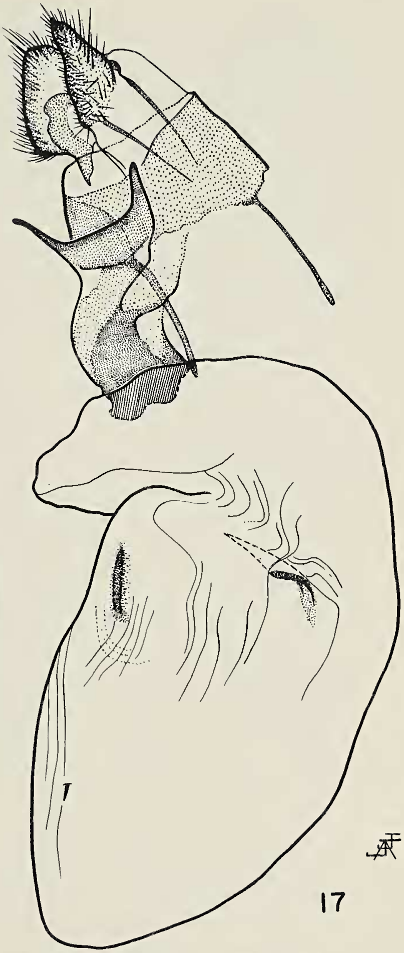

17

Fig. 16. Female genitalia of *B. bicolor* (Bauer-Buckett slide No. 63C23-22) Johnsville, Plumas County, California, May 28, 1962 (H. J. P.).

Fig. 17. Female genitalia of *B. conchiformis conchiformis,* (Bauer-Buckett slide No. 63C23-27) Anderson Springs, Lake County, California, March 16, 1960 (W. R. B. & J. S. B.).

the spring but is also recorded in the winter months. It is found from the humid coastal area (Inverness, Marin County, California) into the Sierra Nevada (Quincy, Plumas County, California) and from Marin County, California, northward into British Columbia, Canada (Teste *Blackmore,* 1927). One of its known food plants, Snowberry, *Symphoricarpos albus* (= *rivu-*

laris of Munz), is rather widely distributed, occurring from Monterey County, California, eastward into the Sierras and thence northward into Alaska. It seems probable that with further research concerning host plants, *conchiformis* may prove to be a more general feeder than it is presently known to be.

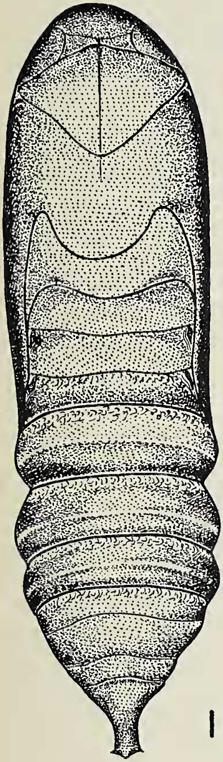
This species can be superficially distinguished from *bicolor* McDunnough by its scattered green scales on the primaries as well as by the lack of distinct, contrasting secondaries. It can be superficially distinguished from *conchiformis suffusa* Buckett, n. ssp. by its contrasting median area, white irrorated scales in both the subterminal and terminal areas, and pure white obicular and reniform of the primaries.

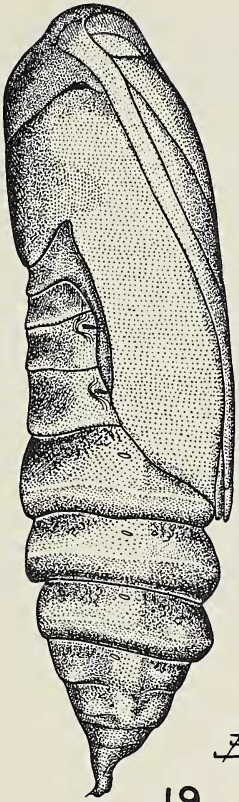
Larval description (5th instar): HEAD 1.9 mm broad, light pinkish with blue and brown pattern; 4.3 mm broad at abdominal segment 2 (larva preserved in KAAD and injected); abdominal segments proportionally as in figures 17-25; skin smooth; general color pinkish lilac; middorsal line light pink, margined by thin white lines, these thin white lines outwardly margined by broad lilac bands, 5 mm broad; lilac band bordered by light pink bands, 1.0 mm broad; supraspiracular band 0.5 mm broad, lilac; spiracles black bordered, yellow centered; infraspiracular thin white line margined by a lilac band, being 0.5 mm broad, intrasegmentally broadening to slightly greater than 1.0 mm on middle of segment; ventral surface of larva light pink at segments 2, 3, and 4 with conspicuous lilac splotch; prolegs laterally with pale lilac patches.

Chaetotaxy as in figures 23, 24 and 25 through 32. Mandible and terminal portion of proleg as in figures 21 and 22, respeciively. Pupa as in figures 18, 19, and 20. Larva type No. 63C17-1 (N. 43 Noel McFarland), collected 5 miles northwest of Corvallis, Benton County, Oregon, April-May, 1962 (Noel McFarland). Deposited in the larval collection, Entomology Department, University of California, Davis, California.

Described from a single larva preserved in KAAD and injected. Food plant *Symphoricarpos albus*. From personal correspondence with Mr. McFarland, the author received information involving *Lonicera* sp. as a food plant for *conchiformis* in Southern California.

Mode of cocoon construction is the same as that seen in *Pleroma* spp. (teste McFarland) which is rather distinctive and peculiar. Larval behavior is reminiscent of *Pleroma* spp. as well.


18


19

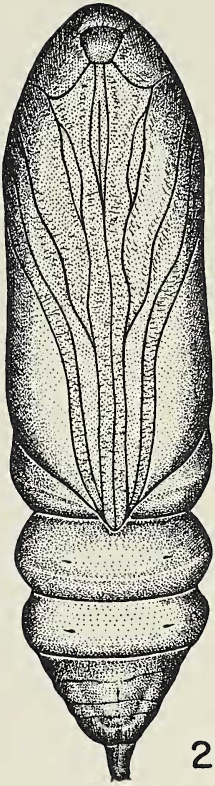

20

Fig. 18. Pupa of *B. conchiformis conchiformis,* dorsal view, 5 miles northwest Corvallis, Benton County, Oregon (A. N. McFarland).

Fig. 19, through 32 are all of *Behrensia conchiformis* with the same data as figure 18.

Fig. 19. Pupa, lateral aspect.

Fig. 20. Pupa, ventral aspect.

Behrensia conchiformis suffusa Buckett, new subspecies

Male: HEAD as in nominate *conchiformis.* Thorax with collar dusky gray, rather than brown; primaries suffused with gray scales giving a dull appearance; median area suffused, gray; transverse anterior and transverse posterior lines outstanding; orbicular and reniform slightly suffused with gray scales; subterminal and terminal areas lacking white scaling, therefore appearing dull gray. Secondaries dorsally, and both primaries and secondaries ventrally as in nominate *conchiformis*.

Male Genitalia: Slightly larger than nominate *conchiformis*, ampulae smaller, aedeagus with heavier sclerotized vesical armature, as in figure 15.

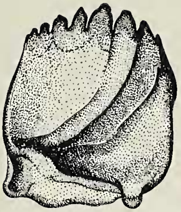
Female: As in male, except secondaries are more dorsally suffused. Female genitalia as in nominate *conchiformis* except genital plate more heavily sclerotized.

Holotype male, Vincent, Mint Canyon, Los Angeles County, California, February 11, 1950 (C. A. Hill).

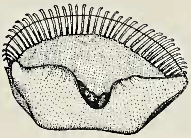
Paratypes: One female, same data as Holotype (designated Allotype); 2 males, 2 females, Verdugo Woodlands, Glendale, Los Angeles County, California, February 17, 1950 (C. A. Hill); 3 females, Glendale, Los Angeles County, California, March 9, 1927; 1 female, Glendale, Los Angeles County, California, April 4, 1928; 2 males, Glendale, Los Angeles County, California, May 4, 1928; 1 female, Glendale, Los Angeles County, California, August (?) 17, 1928; 1 female, Glendale, Los Angeles County, California, January 1, 1928 (E. D. Jones); 1 male, 2 females, Singing Springs, San Gabriel Mountains, Los Angeles County, California, March 18, 1949 (C. A. Hill); 2 males, 2 females, Upland, San Bernardino County, California, March 24, 1957, March 5, 1959, April 2, 1959, December 17, 1957, respectively (T. M. Blackman); 2 males, Calabasas, Los Angeles County, California, October 4, 1928; 1 male, Calabasas, Los Angeles County, California, September 29, 1927; 2 males, San Diego, San Diego County, California, December 26, December 29, 1919 (K. B. Coolidge); 1 male, San Diego, San Diego County, California, March 12, 1924; 1 male, 1 female, San Diego, San Diego County, California, December 26, 1919 (E. Piazza); 1 male, San Diego, San Diego County, California, December 25, 1927; 2 females, San Diego, San Diego County, California, January 2, 1919; 1 female, near Acton, Mint Canyon, Los Angeles County, California, May 5, 1952 (C. A. Hill); 1 male, Pearblossom, Mojave Desert, Los Angeles County, California, May 3, 1952 (C. A. Hill); 1 female, La Crescenta, Los Angeles County, California, April 3, 1954 (W. A. Rees); 1 female, Atascadero, San Luis Obispo County, California, March 30, 1922 (V. L. Claercer); 1 male, 5 miles north of Beverly Hills, Benedict Canyon, Santa Monica Mountains, Los Angeles County, California, March 16, 1956 (A. N. McFarland); 3 females, Ojai, Ventura County, California, February 25, 1962 (W. E. Simonds); 1 male, Singing Springs, Angeles Forest, Los Angeles County, California, March 13, 1950 (C. A. Hill); 2 males, 1 female, 2 miles southeast Modjeska, Santa Ana Mountains, Orange County, California, March 2, 1963 (the Flemings). Additional specimens: 2 females no data; 2 males, 1 female, Denver, Denver County, Colorado, July 19, 1917; 1 female, Denver Denver County, Colorado, May 5, 1916.

DISCUSSION

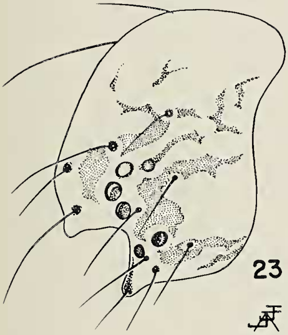
This subspecies can be readily distinguished from nominate *conchiformis* by the suffusion of the primaries, dull white coloration of orbicular and reniform, and lack of white scalation of thoracic vestiture. Genitalically it differs in the male by the smaller ampulae, and less heavily sclerotized vesical armature of the aedeagus. In the female genitalia, the lighter sclerotization of the genital plate will suffice as a diagnostic characteristic.



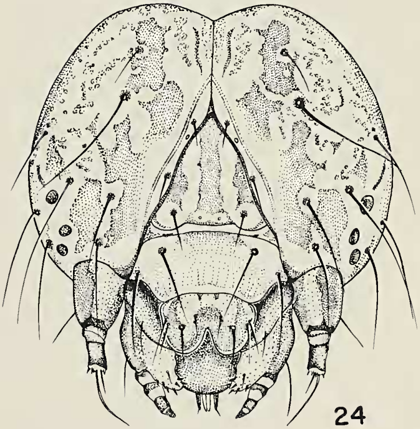
21



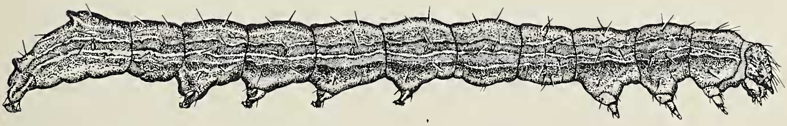
22



23



24



25

Fig. 21. Mandible, mesal aspect.
Fig. 22. Crochet of proleg.
Fig. 23. Lateral view of head, minus appendages.
Fig. 24. Cephalic view of head.
Fig. 25. Lateral view of fifth instar larva.

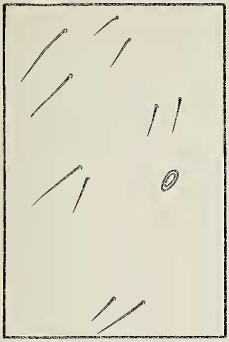
This subspecies is found over the mountainous regions of southern California as well as along the coast to San Diego. It also occurs on the edge of the Mojave Desert. The Colorado specimens exhibit suffusion of the dorsal surface of the primaries and are believed to be *suffusa;* however, they are excluded from the paratypical series because of the great separation in locality.

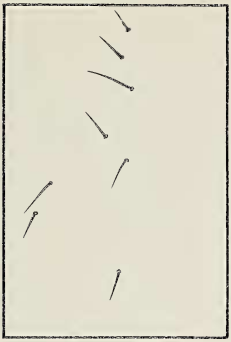
The holotype and 28 paratypes are deposited in the Los Angeles County Museum; 11 paratypes and 1 paratype designated allotype are deposited in the Bauer-Buckett collection, Davis; two paratypes are deposited in the Entomology Collection, University of California, Davis; two paratypes are deposited in the California Academy of Sciences, San Francisco, California; and one paratype is deposited in the J. G. Franclemont collection, Cornell University, Ithaca, New York.

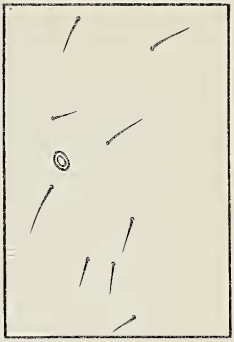
Behrensia bicolor McDunnough

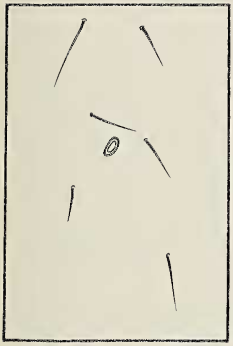
Behrensia bicolor McDunnough, 1941. Canadian Ent. 73:68.

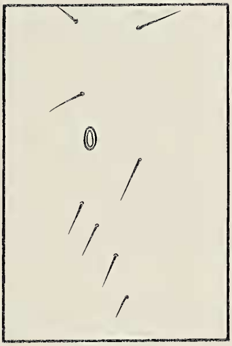
Female: Antennae moniliform, very fine setae along length terminally becoming longer, two lateral rows of gray-white scales for entire antennal length; palps clothed in admixture of brown and black scales and hairs, giving a dark appearance, third segment less than one half length of second; frons clothed with brown scales, scales extending to vertex; eyes round, smaller than those of *conchiformis* Grt. Thorax with collar porrect, separate, protruding forward, composed of brown and white spatulate hairs; remaining dorsum of thorax with white-tipped, coal black spatulate scales becoming intermixed with elongate black hairs and tufting of brown spatulate scales posteriorly; venter of thorax clothed in deep brown vestiture except for a few flattened, white-tipped hairs at wing base; legs clothed in deep brown, white-tipped elongate hairs; all tibiae unspined, mid tibiae with one pair of spurs; tarsal segments with thin white apical band. Primaries dorsally with basal line obscured, a thin black basal dash evident in central portion of the dark grayish basal area as well as a scattering of fawn brown scales; transverse anterior line black, geminate, forming an "S" between costa and inner margin; medial area deep brown; claviform elongate, deep black, hardly discernible from deep brown medial area; median area ventrad and dorsad of orbicular with ground color dark grayish; orbicular white outlined, filled with brown scales, a white dash appearing from base to transverse posterior line on M_3; reniform obscure, black outlined, separate from black transverse posterior line; distally of transverse posterior line a thin brown band from costa culminating in a fawn brown dot between M_3 and Cu_1, then on to inner margin; subterminal and terminal areas gray, washed or irrorated with white scales; subterminal line a zig-zagged series of smokey shadings not clearly defined; terminal line continuous, only appearing broken when fringes are damaged; fringes brownish gray. Ventral surface of

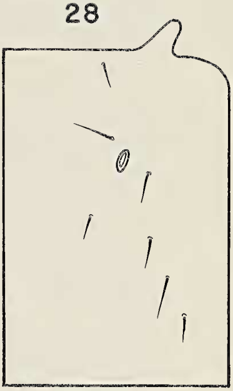

26


27


28


29


30


31

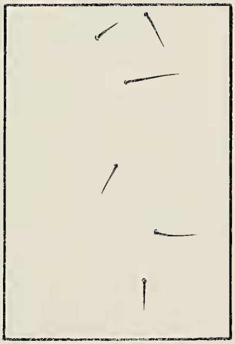

32

Fig. 26, through 32 are all setal maps.
Fig. 26. Thoracic segment No. 1.
Fig. 27. Thoracic segment No. 2.
Fig. 28. Abdominal segment No. 1.
Fig. 29. Abdominal segment No. 3.
Fig. 30. Abdominal segment No. 7.
Fig. 31. Abdominal segment No. 8.
Fig. 32. Abdominal segment No. 9.

primaries smokey brown with hairbrush of white-tipped hairs, central portion with white patch. Secondaries quite diagnostic, bicolor, white on basal half, deep brown for apical half; fringes whitish tipped at anal angle becoming concolorous deep brown toward costa. Ventral surface of secondaries as in dorsal surface except in white half of wing where costal portion is irrorated with deep brown scales. Abdomen with dorsum of very deep brown hairs; two huge fawn brown tufts present, one on segment 3 and the other on segment 4; ventral surface of dark brown hairs, posteriorly of white-tipped deep brown hairs. Genitalia as in figure 16. Greatest length of forewing 12 mm.

Male: As in female, also retinaculum whitish; greatest length of forewing 13 mm. Genitalia as in figures 11 and 12.

DISCUSSION

This little known species has been collected more frequently in the past three years, a series of over 40 specimens having been collected. Until recently, *bicolor* was known only from the holotype, two paratypes, and one additional specimen. This increase in number of collected specimens is probably due to the use of the 15 watt fluorescent black light in place of regular incandescent white light and continuous combined with more extensive collecting.

From data of the past three years, it is also interesting to observe that the range of bicolor has been considerably extended, its previously known range being only a short 5 mile extension from the type locality. There are now three counties represented, including Nevada, Plumas, Shasta counties, of California.

This species can superficially be distinguished from *conchiformis conchiformis* Grt. and *conchiformis suffusa* Buckett by its contrastingly bicolor secondaries, and genitalically by the lack of the huge prominent "Y" shaped antivaginalis of the genital plate in the female.

REFERENCES

BARNES, WM. and J. McDUNNOUGH, 1917. Checklist of the Lepidoptera of Boreal America. Herald Press, Decatur, Illinois, 392 + viii pp.

BLACKMORE, E. H., 1927. Checklist of the Macrolepidoptera of British Columbia. Banfield Pub. Co., Victoria, B. C., 47 pp.

DYAR, H. G., 1902. A list of North American Lepidoptera and key to the literature of this order of insects. *Bull. U. S. Natl. Mus.* No. 52.

FORBES, W. T. M., 1954. Lepidoptera of New York and neighboring states (Noctuidae). *Memoir* 329, *Cornell University Agricultural Experiment Station.*

GROTE, A. R., 1875. *Canadian Ent.* 7:70.

HAMPSON, G. F., 1906. Cat. of the Noctuidae. *Brit. Mus.* 6:287.

McDUNNOUGH, J. H., 1941. *Candian Ent.* 73(4):68.

SEITZ, A. A., 1923. The Macrolepidoptera of the world. 7:197.

SMITH, J. B., 1893. Checklist of the Noctuoidea of Boreal America. *U. S. Natl. Mus. Bull.* No. 44.